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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/718,343	11/24/2000	Adam Michael Baumberg	1263.1796	2598

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EXAMINER

CARTER, AARON W

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 05/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/718,343

Applicant(s)

BAUMBERG, ADAM MICHAEL

Examiner

Aaron W Carter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-148 is/are pending in the application.
- 4a) Of the above claim(s) 21-68, 81-86, 100-103, 145, 147 and 148 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-9, 12-20 and 144 is/are allowed.
- 6) ☒ Claim(s) 10, 11, 69, 70, 78-80, 87, 96-99, 104-143, 146 is/are rejected.
- 7) ☒ Claim(s) 71-77 and 88-95 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5.7</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I including claims 1-20, 69-80, 87-99, 104-144 and 146 in Paper No. 10 is acknowledged. Examiner notes that in paper number 10, the applicant elected 87-89 instead of 87-99, which was indicated in paper number 9 as being part of Group I. Therefore the examiner will examine claims 87-99 and assume that the election of claims 87-89 by applicants in paper number 10 was a mistake.

Specification

2. The disclosure is objected to because of the following informalities:

Each section is not clearly labeled, for example there is no distinction between the Background and Summary.

Appropriate correction is required.

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification. For example, in claim 69, line 15, the term "characterizing" is spelled like this and in claim 70, line 8, it is spelled "characterising".

Claim Objections

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4. Claims 10, 11 and 69 are objected to because of the following informalities:

As to claim 10, in 20, the phrase "to characterize and image point", appears to be grammatically incorrect, in the examiners opinion it would be correct if rephrased as "to characterize an image point". The same issue arises in claim 11 on line 20 and claim 69 on line 20.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 97, 98 and 143 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As to claims 97 and 98, the invention discloses non-functional descriptive material; please refer to the phrase on line 2 of claim 97, stating, "...generating signal conveying information..." A signal, per se, which is nothing more than an abstract idea, in order for the functionality of a data signal to be realized, it must be tangibly embodied on a "computer readable medium". Claim 98 raises similar issues and the examiner suggests canceling claims 97 and 98.

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As to claim 143, the invention discloses non-functional descriptive material; please refer to the phrase on line 1 stating, "A signal conveying processor implementable instructions".

A signal, per se, which is nothing more than an abstract idea, in order for the functionality of a data signal to be realized, it must be tangibly embodied on a "computer readable medium".

Examiner suggests canceling claim 143.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10, 11, 69, 107-143 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 10 and 11 recite the limitation "said image" in lines 13 and 19. There is insufficient antecedent basis for this limitation in the claim.

Claim 69 recites the limitation "said image" in line 19. There is insufficient antecedent basis for this limitation in the claim.

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Claim 107 recites the limitation "in images represented by image data received by said image receiver" in line 6. There is insufficient antecedent basis for this limitation in the claim. The image receiver, receives data representative of an image, see lines 3 and 4.

Claims 122, 123 and 141 recite the limitation "said image" in line 14. There is insufficient antecedent basis for this limitation in the claim.

Claim 124 recites the limitation "said image" in line 7. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 70, 78-80, 87, 96, 99, 104-106, 142 and 146 are rejected under 35 U.S.C. 102(a) as being anticipated by an article entitled "A Fast Matching Method for Color Uncalibrated Images using Differential Invariants" by Gouet et al. ("Gouet").

As to claims 70, 87 and 146, Gouet discloses an apparatus for generating characterization data characterizing an image comprising:

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A data receiver for receiving image data representative of an image (page 368, section 1, paragraph 1, lines 1-3, wherein the computing of synthetic images corresponds to receiving data representative of an image);

A feature detector for detecting a plurality of features in an image represented by image data received by said data receiver (page 372, section 4.2, element 1, wherein feature extraction corresponds to feature detector); and

A feature characterizer for characterizing features detected by said feature detector (page 372, section 4.2, element 2, wherein feature vector corresponds to characterization value), said feature characterizer being arranged to characterize portions of image data representative of regions of an image including features detected by said feature detector (pages 370-371, section 4.1.2 and page 372, section 4.2, element 3), wherein feature characterizer is arranged to generate characterization data for a said region of an image such that said characterization is substantially unaffected by transformations resulting in linear distortions of said region (Abstract, lines 5-7).

As to claim 78, Gouet discloses an apparatus in accordance with claim 70 further comprising a feature associator for identifying matches between features in pairs of images, wherein said feature associator is arranged to determine a match between features in pairs of images on the basis of characterization by said feature characterizer of features in said pair of images (Abstract, line 8).

As to claim 79, Gouet discloses an apparatus in accordance with claim 78, further comprising:

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A data store for storing characterization data for features in a plurality of images, and
A feature associator, said feature associator being arranged to determine, utilizing the characterization of features of received image data characterized by said feature characterizer, a match between features defined by characterization values stored in said data store (Abstract, line 8 and section 5).

As to claim 80, Gouet discloses an apparatus for generating data defining a three-dimensional computer model of an object comprising:

Apparatus for identifying matches between features in pairs images in accordance with claim 78;

A viewpoint determinator for determining on the basis of the matching of features in a pair of images by said apparatus the relative viewpoints from which said images have been recorded (page 375, section 5 last paragraph before section 6, lines 1-3); and

A model generator for generating data defining a three-dimensional computer model of the object utilizing said image data in said images and said determination of the relative viewpoints from which said images have been recorded by said viewpoint determinator (page 375, section 5 last paragraph before section 6, line 6).

As to claim 96, please refer to rejections made for claim 78 above.

As to claim 99, please refer to rejections made for claim 80 above.

As to claims 104-106, please refer to rejections made for claims 70 and 78 above.

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As to claim 142, Gouet discloses a storage medium storing processor implementable instructions for causing a programmable processing apparatus to become operable to perform a method in accordance with at least one of claims 12, 37, or 61, 87, or 124 (page 372, section 4.2, paragraph 1, lines 4-5, "computes").

Allowable Subject Matter

8. Claims 1-9, 12-20 and 144 are allowed.
9. Claims 71-77 and 88-95 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
10. Claim 10, 11, 69, 107-141 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.
11. The following is an examiner's statement of reasons for allowance: As to claim 1, 12 and 144, none of the prior art teach or fairly suggests wherein an image point characterizer is arranged to determine said characterization values on the basis of image data for different sized regions, said size of said region being selected on the basis of the size of a said region utilized to detect the said feature by said feature detector, in combination with other limitation of the claims. Gouet (already of record) discloses a feature detector, feature characterizer and feature matching, but does not teach or fairly suggest determining the characterization values on the

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basis of image data for different sized regions, where the size of the region being selected on the basis of the size of the region utilized to detect the feature by the feature detector.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

An article entitled "Heirarchical Region Based Stereo Matching" by Cohen et al. discloses stereo matching that takes size and scale into consideration.

An article entitled "Rigidity Constraints across two views under weak perspective" by Chung discloses stereo matching that takes size and scale into consideration.

An article entitled "Adaptive Smoothing: A General Tool for Early Vision by Saint-Marc et al. discloses stereo matching that takes size and scale into consideration.

US Patent 5,073,962 to Califano discloses stereo matching that takes size and scale into consideration.

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US Patent 5,911,005 to Uchiyama discloses stereo matching that takes size and scale into consideration.

US Patent 6,381,346 to Eraslan discloses stereo matching that takes size and scale into consideration.

US Patent 5,719,954 to Onda discloses stereo matching that takes size and scale into consideration.

US Patent 5,734,743 to Matsugu et al. discloses stereo matching that takes size and scale into consideration.

US Patent 5,974,192 to Kundu discloses stereo matching that takes size and scale into consideration.

US Patent 6,282,317 to Lue et al. discloses feature characterization.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron W Carter whose telephone number is (703) 306-4060. The examiner can normally be reached on 7am - 3:30 am (Mon. - Fri.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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